PATENT
Atty. Dkt. No.: 8036-US1 (23336-2059)

Remarks

Claims 19-30 were pending in the present application, to which claims 31-44 have been added. It is respectfully submitted that the pending claims define allowable subject matter.

Initially, it is noted that the outstanding Office Action does not treat all of the pending claims on the merits. In the Amendment filed April 10, 2006, new claims 22 to 30 were added. However, in the outstanding Office Action, only claims 19 through 25 are acknowledged as being pending and are addressed on the merits. There is no discussion or reference, in the outstanding Office Action, to the additional pending claims 25-30 from the April 10 Amendment. The undersigned has examined the file wrapper on the USPTO Public Pairs site and all of the pending claims 19-30 appear on the image file wrapper. It is believed that the outstanding Office Action is not fully responsive as it does not examine each and every pending claim. Notwithstanding, the present response has been submitted in an attempt to advance prosecution, by addressing each of the pending claims and their distinctions over the prior art of record.

In the outstanding Office Action, the claims are rejected under 35 USC § 102(b) as being anticipated by various references of record. Applicants respectfully traverse these rejections for reasons set forth hereafter. In general, it is submitted that the prior art, as a whole, fails to teach or suggest foaming a non-neutral pH aqueous liquid with a foam concentrate that is pH tolerant, where the foam continues to drain after foaming and where the pH of the non-neutral pH aqueous liquid is controlled to be opposite to a pH of a spill on which the foam is to be deployed. Thus, as now required by claim 19, when a spill is acidic, the pH of the liquid is controlled to be caustic. Similarly, when a spill is caustic, the pH of the liquid is controlled to be acidic. The "opposite" is used relative to a neutral pH. The term "opposite" does not indicate that the amount that the pH of the liquid is above or below neutral equals an amount that the pH of the spill is below or above neutral. For example, if a spill has a pH of 10 (3 units above neutral), the liquid would be controlled to have an acidic pH (i.e., less than 7), but not necessarily a pH of 4 (3 units below neutral). Similarly, if a spill has a pH of 5 (2 units below neutral), the liquid would be controlled to have a pH somewhere above 7, but not necessarily 9.

Also, to be clear, the claimed pH controlling operation may be done before, concurrently with, or after the foam concentrate is joined with the liquid, so long as the pH of the liquid is controlled independent of and separately from the addition of the foam concentrate.

Applicants respectfully traverse the anticipatory rejection of claim 19-25 based on the 128 Stern patent (USP 6,262,128). It is respectfully submitted that the 128 Stern patent fails to teach or suggest the use of a non-neutral pH aqueous liquid. The 128 Stern patent also fails to teach or suggest controlling a pH of the non-neutral aqueous liquid to be opposite to a pH of a spill on which the foam is subsequently deployed. The 128 Stern patent describes a process of forming a foam composition for use with various applications, including containing and suppressing volatile, noxious, explosive, flammable or otherwise dangerous chemical vapors. Nowhere does the 128 Stern patent teach or suggest that it would be desirable or advantageous to change the pH of the liquid to have a pH that is opposite to the pH of the spill.

In the outstanding Office Action, column 2, lines 8 to 31 are cited in connection with the types of hazardous materials to which the foam of the 128 Stern patent is intended for operation. However, nowhere in the cited section, nor elsewhere in the text of the 128 Stern patent, is there any suggestion to control the pH of the solution in the claimed manner. To the contrary, the foam created in accordance with the teachings of the 128 Stern patent would have a substantially neutral pH. In the Background section at column 1, line 29, the Stern patent indicates that the foam is prepared from concentrates by diluting the concentrate with freshwater or seawater, both of which have a substantially neutral pH. Throughout the detailed description of the 128 Stern patent, it is only suggested to utilize a large percentage by volume of fresh or sea water to dilute the foam concentrate. Fresh water and sea water both have a substantially neutral pH and thus when a small percent by volume of foam concentrate is added to a large volume of water, the foam combination would still have a substantially neutral pH. Regardless of whether the foam concentrate, prior to being diluted with water, has a non-neutral pH, the amount of foam concentrate that is added to the water is in such a small percentage by volume, relative to the volume of water, that the resulting foam/liquid combination would still have a substantially neutral pH. Thus, the 128 Stern patent does not anticipate claim 19.

Applicants traverse the anticipatory rejection of claims 19-25 based upon Dean (USP 5,406,019). The Dean patent describes an oil spill recovery system that joins two compounds to

form a chemical reaction in connection with recovering an oil spill. The two compounds are added to one another to create a foam having a matrix, in the oil is trapped to facilitate a subsequent recovery process. The oil spill recovery system of the Dean patent does not teach or suggest producing a slow draining non-neutral pH foam by foaming an aqueous foamable concentrate with a non-neutral pH aqueous liquid. Instead, in the Dean patent, the two compositions are added with one another and a reaction there between causes the foam to be created. Dean's foam is not created by foaming a concentrate with a liquid. Further, the Dean patent does not teach or suggest the use of a non-neutral liquid at column 8, lines 20-37 (as cited in the Office Action) or elsewhere. The cited section of the Dean patent describes a compound B that is added with compound A to form a chemical reaction for foam producing conditions. The composition B includes an activator for the foam to capture hydrocarbons in the matrix. The activator may be an acetic acid in the amount of 4% to about 10% by weight in water. The amount of composition B to be added can be determined by visually observing the degree of foaming and by adding more or less. As noted above, water has a substantially neutral pH. Thus, when Dean's composition B is added to the water in an amount of 4 to about 10% by weight, the resulting combination does not form a non-neutral pH aqueous liquid. As clearly required by claim 19, the slow draining foam is produced by foaming a concentrate with a non-neutral pH aqueous liquid. Dean clearly suggests only to add neutral water as the aqueous liquid. The compositions A and B when joined create a chemical reaction to form the foam. The combination of the compounds A and B would not and are not described to raise or lower the pH of the overall solution by an amount sufficient to form a non-neutral pH aqueous liquid for treatment of a spill.

Further, nowhere does Dean teach or suggest controlling the pH of the aqueous liquid to be opposite to the pH of a hazardous material spill. Instead, Dean's compositions A and B are formed primarily based upon the desire to create a foam that will lower the viscosity of the oil and form an emulsion with the oil that traps the oil within the foam (see column 8, lines 32-45). The compound A includes an organic substance that is used to lower the viscosity of the oil and form an emulsion with the oil esters that are involved in the reaction to provide emulsification. Compound B also consists of foam forming reactant and water as a carrier vehicle. Nowhere does Dean teach or suggest any advantage or a desire to add additional compounds that control

the pH of the overall aqueous liquid to be opposite to a pH of the spill. The amounts of compound A and compound B that are added to the water are not sufficiently large in percentage by weight of the overall combination of the compound A, compound B and the water to change the pH of the water or foam combination. Instead, the pH of the foam combination is substantially controlled and determined by the pH of the water, which is neutral. Thus, the Dean patent does not anticipate claim 19.

Applicants traverse the anticipatory rejection of claims 19-25 based on Woo (USP 5,232,632). The Woo patent describes a foam liquid that is used on hard surfaces as a detergent composition. The liquid detergent composition is used as a foam for cleaning hard surfaces and pertains to acidic liquid detergent compositions for bathrooms. Nowhere does the Woo patent teach or suggest a method for treating a hazardous material spill. Nowhere does the Woo patent teach or suggest controlling a pH of a non-neutral aqueous liquid to be opposite to a pH of a hazardous material spill. Woo's teachings are not concerned with hazardous material spills and there is no suggestion or reason to control the pH of Woo's liquid detergent to be opposite to the pH of a spill on which a foam is to be deployed.

Further, the Woo patent does not teach or suggest producing a foam by foaming a concentrate with a non-neutral liquid. The liquid with which Woo's detergent composition is combined is water, which has a neutral pH. Woo's composition is a liquid detergent having a viscosity in the range of 15 to about 250 cps and packaged in a non-aerosol spray device that produces a liquid spray when the viscosity of the composition is below about 15 cps (column 1, lines 53-57). The detergents described in the Woo patent do not constitute foamable concentrates. Further, the detergents of the Woo patent do not constitute slow draining foams and do not form a foam when deployed over a hazardous spill from which the liquid continues to drain. Instead, the foam created by the spray means used with Woo's detergent breaks down quickly. Woo's detergent is not constructed to form a foam blanket that is intended to maintain its integrity over a long period of time. Instead, Woo's detergent is intended to be wiped off with a cloth, sponge or paper towel in a very short period of time after sprayed on a hard surface. There is no concern, nor motivation to modify the formula, to provide a slow draining foam. Thus, the Woo patent does not anticipate claim 19.

Applicants respectfully traverse the anticipatory rejection of claims 19-25 based on Norman (USP 5,133,991). Norman describes a method for applying a biodegradable protein foam to a substrate, such as a landfill, sewage, contaminated soil, sludge deposits, compost pile and the like. Norman describes a process whereby a protein based solution is mixed from a foam concentrate with air in a foam producing nozzle and spread over the surface of the substrate. Norman does not teach or suggest controlling the pH of an aqueous liquid with which a concentrate is foamed, such that the pH of the aqueous liquid is opposite to a pH of the non-neutral hazardous spill. In Norman, the foam is created to form a solid layer to reduce odor and prevent the release of other vapors and fumes from the decomposition of organic material in the substrate. As stated in the Summary of the Invention, an objective of Norman's invention is to provide a protein based foam for use as a covering or barrier that will last for up to several days before collapsing (column 2, lines 50-53). Thus, a fundamental aspect of Norman's foam is that the liquid not drain from the foam. Claim 19 clearly requires that the foam created by foaming a concentrate with a liquid be slow draining and tolerant to non-neutral pH of the aqueous liquid in that the non-neutral pH liquid continues to drain from the non-neutral pH foam after being deployed over the hazardous spill. A significant aspect of the protein based foam of Norman is that the foam not drain liquid therefrom. Instead, the foam created by Norman represents a solid foam that sets up to form a cover or barrier.

To further emphasize the fact that Norman teaches away from a slow draining foam, attention is directed to column 5, line 57 through column 6, line 59. Norman states that an additional foam stabilizer may optionally be added to improve the resistance to rain and/or wind and to improve the long term (measured in days) stability of the foam blanket when applied (column 5, lines 64-67). Xanthan Gum can be added as a stabilizer, but may cause the foam to gel when the xanthan gum is added too soon. Thus, Norman suggests adding the xanthan gum to the mixture just prior to use (column 6, lines 14-17). In an exemplary field test, Norman explains that a 3% solution of the foam applied to a thickness of 6 inches lasted approximately 1-3 days without a foam stabilizer. By adding xanthan gum, the foam lasted 5-7 days. The stabilized gum provided a thick stable cover capable of supporting substantial weight. Wind and rain resistance properties were also improved by adding the xanthan gum (column 6, lines 33-

40). Thus, Norman clearly fails to teach or suggest a slow draining foam, where the liquid continues to drain from the foam after being deployed over the material spill.

Further, there is no suggestion within Norman to control the pH of a non-neutral aqueous liquid to be opposite to the pH of a hazardous spill. In the outstanding Office Action, column 5, lines 10-17 are cited with respect to the pH of Norman's protein based foam. However, the cited section from Norman does not teach or suggest that the pH of the liquid be non-neutral. Further, the cited section from Norman does not teach or suggest that the pH of the liquid be opposite to the pH of the spill. Instead, the cited section at column 5 explains that a protein hydrolysate is a commercially available concentrate having a pH from approximately 7 to 8. The pH of the protein hydrolysate is substantially neutral and thus if added with water would remain at a substantially neutral pH. Nowhere does Norman teach or suggest adding any additional agent or otherwise controlling the pH of a liquid before or after foaming to provide a non-neutral pH aqueous liquid. As column 5, lines 56-63, Norman explains that the basic foam concentrate is diluted to approximately 2 to 3.5% with 96.5% to 98% water prior to turbulation to produce the foam. A concentrate with a pH of 7 to 8, when added as 2 to 3.5% with water (that is also substantially neutral) would result in a substantially neutral foam blanket. Thus, Norman fails to anticipate claim 19.

Applicants respectfully traverse the rejection of claims 19-25 based upon the 363 Stern patent (USP 5,124,363). The 363 Stern patent describes an aqueous air foam of polyhydroxy polymer for treating hazardous materials or other substrates. The foam created in accordance with the teachings of the 363 Stern patent creates a non-flowable foam in which the foam forms a cross-link matrix that prevents drainage. Thus, the foams created in accordance with the teachings of the 363 Stern patent do not constitute slow draining foams that continue to drain liquid after being deployed over material spills. The 363 Stern patent uses a pH modifier to impart an appropriate pH to the solution for time controlled formation of gelled or viscous air foam from a fluid air foam. Thus, the 363 Stern patent uses a pH modifier to control setup of the foam into a gel consistency. The 363 Stern patent describes at column 8, lines 58-63 that the gelled foam of the invention has a gel time that is characterized as the time required for the freshly prepared fluid aqueous air foam to become non-flowing. A preferred gelled foam system includes a cross-linking agent, an aqueous solution having a pH of about 9 to 10.5 and certain

other components. The pH of the aqueous solution is set within the range taught by Stern to achieve the gelled foam. Nowhere does the 363 Stern patent teach or suggest controlling the pH of the aqueous liquid to be opposite to a pH of a hazardous spill on which the foam is to be deployed. Stern's foam is intended for a different use than the claimed method for treating hazardous material spills. Consequently, Stern describes a different process that uses different compositions to form a foam having different characteristics than claimed. Stern's foam is constructed to from a gel that is non-flowing. To do so, Stern uses among other things a pH modifier to raise the pH to between 9 and 10.5. Stern's foam would utilize a pH modifier to raise the pH of the solution to between 9 and 10.5 without regard for the pH of the material to which the foam is to be applied. In contrast, claim 19 clearly defines the pH of the liquid to be controlled to be opposite to the pH of the spill.

Further, the 363 Stern patent fails to teach or suggest a slow draining foam. As explained above, a fundamental and necessary characteristic of Stern's foam is to form a gel that does not flow and does not drain. As required by claim 19, the foam is slow draining and the concentrate is tolerant to the non-neutral pH of the liquid in that the liquid continues to drain from the foam after being deployed over the spill. The foam of the 363 Stern patent does not exhibit the above claimed characteristics, and thus does not anticipate claim 19.

Applicants respectfully traverse the anticipatory rejection of claims 19-25 based on the 903 Alm patent (USP 4,923,903). The 903 Alm patent describes a dyed aqueous air foam that is used to cover a landfill. The foam is constructed to form a solid layer to prevent odor and other vapors from escaping from the organic material within the landfill. The foam is not constructed to neutralize fumes nor the content of the landfill. The undersigned has reviewed the 903 Alm patent and nowhere does the 903 Alm patent appear to teach or suggest any control over the pH of the liquid to which a concentrate foam is added. The 903 Alm patent uses water in combination with the composition to form the solid foam. The water is neutral and thus when added to the other compositions would continue to have a substantially neutral pH. Nowhere does the 903 Alm patent teach or suggest controlling the pH of the aqueous liquid to be opposite to the pH of a hazardous spill. In addition, nowhere does the 903 Alm patent teach or suggest the foam to be a slow draining foam from which the liquid drains after the foam is deployed over a spill.

Applicants traverse the anticipatory rejection of claims 19-25 based upon the 746 Alm patent (USP 4,795,746). The 746 Alm patent describes a foam composition that is coated over an exposed surface, such as a landfill, to seal and protect the underlying surface. The 764 Alm patent resembles the teachings of the 903 Alm patent in that the 746 Alm patent is also concerned with forming a gelled foam that does not permit water to drain therefrom and instead is constructed to form a solid layer to block the release of odor. The 746 Alm patent does not teach or suggest how to produce a slow draining foam, nor control the pH of the liquid to be opposite to the pH of a hazardous material spill. As explained at the paragraph bridging columns 3 and 4, the 746 Alm patent suggests to create a closed cell hydrogel air foam or a viscous water containing air foam that forms a coating or blanket over a substrate. The coating prevents emission and the release of vapors. The film is described to be gelled to minimize and prevent the drainage of liquid from a lamellae and the consequent rupture of the bubbles and collapse of the foam structure (column 4, lines 50-55). Due to the hydrophilic nature of the polymer, water in the foam is retained or bound and it, together with the closed cell nature of the gel, provides a stable, persistent and long lasting sealing blanket or barrier (column 4, lines 55-60). Thus, it is clear that the 746 Alm patent teaches that the gel not be slow draining. Further, nowhere does the 746 Alm patent describe or suggest to control the pH of the liquid to be opposite to the pH of the spill. Thus, the 746 Alm patent does not anticipate claim 19.

Applicants respectfully traverse the rejection of claims 19-25 based upon the Kent patent (USP 4,795,590). The Kent patent describes a treatment process for a hazardous material. Kent does not teach or suggest controlling the pH of the liquid to be opposite to the pH of a hazardous material spill. Column 3, lines 14 etc., in the Kent patent (cited in the Office Action), does not suggest the claimed control over the pH of the liquid. Instead, the Kent patent describes, at column 3, the process to prepare a foam in which water is added to the foam. The water, having a substantially neutral pH, would similarly create a combination with the foam that has a substantially neutral pH. Further, the foam created in accordance with the teachings of the Kent patent is not slow draining. As explained at column 3, lines 37-45, a polymer is added to create a closed celled structure of applied foam that is stabilized in the form of a non-fluid gelled air foam or a viscous air foam. The foam has a two stage system of discontinuous air phase and a continuous soft semisolid hydrogel phase comprised of bound water and water insoluble polymer

(column 3, lines 40-45). The lamellae or liquid film of the air bubbles in the applied fluid foam is gelled or becomes viscous thus minimizing, reducing or preventing the drainage of liquid from the lamellae and the consequent rupture of the bubbles and collapse of the foam structure (column 3, lines 52-57). Due to the hydrophilic nature of the polymer, water in the foam is retained or bound and it, together with the closed cell nature of the resulting gel, provides a stable persistent blanket (column 3, lines 57-62). Thus, it is clear from the teachings of the Kent patent that a foam formed in accordance therewith would not be slow draining.

In view of the foregoing, it is submitted that claim 19 is patentably distinct over each and every reference applied in the outstanding Office Action. The remaining references of record are deficient for reasons of record and for reasons discussed above in connection with the above references.

Moreover, it is submitted that the dependent claims define additional unique and non-obvious features. Claims 20 and 21 further define the liquid to have pHs in certain ranges. Claim 20 defines the liquid to form an acidic foam for use with a caustic spill, while claim 21 defines the liquid to form a caustic foam for use with an acidic spill. As explained above, nowhere in the prior art is it suggested to modify the pH of the liquid depending upon the type of spill. While certain foam concentrates taught in the prior art may not be precisely 7.0 in pH, the percentage by weight that such concentrates are added to a liquid is very small (e.g., 2-10%). Consequently, the overall combination, with such low percentages of foam concentrate in a large volume of neutral water, results in a substantially neutral combination. Hence, the foams created in accordance with the prior art teachings simply do not have sufficient neutralizing capability to neutralize a non-neutral material spill.

Further, the prior art fails to teach or suggest the characteristics of the foams in dependent claims 22 to 30. Claim 25 defines the foam to remain in a continuous blanket for at least 15 minutes when a difference between a pH of the foam and the pH of the spill is 8 pH units or more. Claim 26 requires the blanket to remain at a substantially constant thickness for about 15 minutes when the difference in pH between the foam and spill is 12 pH units or more. Claims 27-30 require the foam to remain at a constant thickness for certain periods of time when certain differences in pH exist between the pH of the foam and the spill. Nowhere does the prior art teach or suggest a foam that has such characteristics. As explained above, the prior art is not

concerned with differences between the pH of the foam, once added to a non-neutral liquid, and the pH of a spill. In fact, nowhere in the prior art references is the pH of a spill discussed. In accordance with the presently claimed method, foams are created having certain characteristics that are tolerant to non-neutral aqueous liquids and that maintain a slow draining property even after deployed over a non-neutral spill, where there are substantial differences between the pH of the foam and the pH of the spill.

Further, new claims 31-42 have been added to further define additional unique characteristics of the present invention. Claim 31 further defines the liquid to drain from the non-neutral pH foam sufficiently slowly to avoid excessive heating of the spill. There is no discussion within the prior art, nor concern, for controlling the rate at which liquid drains from the foam to avoid heating of a spill. Claim 32 and 33 defines the foam to scrub non-neutral fumes as the fumes are released from the spill and passed through the blanket of foam. Claim 33 further defines the scrubbing to substantially neutralize the fumes to a pH of between 6 and 8. The prior art of record does not discuss the neutralizing capabilities or characteristics of bubbles within the foam. Further, it is submitted that the foams created in accordance with the prior art teachings would not exhibit notable neutralizing capabilities of fumes that pass through the blanket of foam. As noted above, the foams of the prior art are diluted using water which is substantially neutral. Consequently, the bubbles within the foam would have a substantially neutral pH and thus exhibit little or no neutralizing characteristics of non-neutral fumes.

Claims 34 through 36 further define the pH of the solution to be above or below certain limits. The prior art does not discuss changing the neutral pH of the water solution used to dilute the prior art foam concentrates.

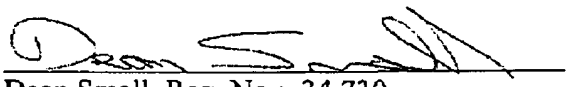
Claim 37 further recites adding a caustic agent, independent of and separate from the foam concentrate, to the liquid to raise the pH of the non-neutral liquid for use on an acidic spill. Claim 40 further recites adding an acidic agent, independent of and separate from the foam concentrate, to the liquid to lower the pH of the solution for use on a caustic spill. Claim 38 defines the caustic agent to be added to the liquid before the foaming of the foamable concentrate with the liquid. Claim 41 defines the acidic agent to be added to the liquid before or after the foamable concentrate is added to the liquid. As explained above, there is not suggestion within the prior art to change the pH of the water used to dilute foam concentrates. Similarly, it would

necessarily follow that there is no suggestion to add, before, during or after the foaming operation, a caustic agent or an acidic agent to the liquid depending upon the type of spill to be treated. Claims 39 and 42 further define the amount of caustic agent or acidic agent to be added to the liquid, namely at least 3% by weight. Claims 43 and 44 define the percentages by volume of liquid and concentrate. The prior art lacks any suggestion to change the pH of the liquid.

In view of the foregoing comments, it is respectfully submitted that the prior art fails to teach or suggest the claimed invention. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the telephone number listed below.

Respectfully Submitted,

Date: November 29, 2006



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